

SCIENCE

And Technology Program



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Many Reclamation concrete structures are approaching 100 years old. More than 50 percent of the concrete structures were constructed before the development of accepted modern concrete materials methodology and construction practices. These structures are now deteriorating and in need of significant upgrades to continue to provide project benefits. A decision support system needs to be developed to identify concrete structures in the Reclamation inventory that are susceptible to attack by either age or exposure to aggressive environmental conditions. The decision support system will help project managers evaluate observed concrete infrastructure deterioration and determine the probable causes of degradation, based on pertinent information concerning age of the structure, location of structure, and the state-of-the-art in materials engineering technology at the time of construction.

The decision support system is being developed to give users complete access to information regarding deterioration and long-term serviceability of Reclamation's concrete infrastructure, particularly those aging structures entering the latter stages of their design life. This system should categorize potential deterioration mechanisms of concrete structures, compare the observed or tested materials properties of the concrete with expected properties of aging concrete, access existing databases of project materials and properties, and link each structure to the operations and maintenance and dam safety records.

The format and structure of the decision support system for aging concrete have been developed. A time-line of significant developments in the state-of-the-art of concrete technology leading to improved quality and durability has been created. This allows the user to identify potential deterioration mechanisms affecting the project structures inventory. The decision support system will be integrated into the Dam Safety Information System.

Dam Safety Office

Dolen, Timothy P. 1999. Decision Support System for Aging Concrete, Technical Memorandum.

Moxon, Sue. October 1999. Quality Assurance - Growing Old Gracefully. International Water and Power and Dam Construction Magazine.